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## Notes on the Herpetological Fauna of the Mexican State of Sinaloa

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ABSTRACT: The report is based upon a collection of reptiles and amphibians, now on deposit at the University of Kansas, secured by Edward H. Taylor in the southern part of Sinaloa, July 19 to 25, 1934. Two hundred and forty-one specimens were secured: Amphibians, 128 specimens, twelve species; lizards, 94 specimens, ten species; snakes, 16 specimens, seven species; turtles, three specimens, one species. A list is given of the species known from the state. *Bufo kelloggi*, sp. nov., is described from a locality near Mazatlán; and *Trimorphodon paucimaculatus*, sp. nov., is described from Mazatlán. A bibliography is appended.

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THE basis for this report is a collection of reptiles and amphibians which I made in the southern part of Sinaloa during the summer of 1934. The period from July 19 to July 25 was spent in the region about Mazatlán and Presidio, and 241 specimens were collected. These are distributed as follows: Amphibia, 128 specimens, twelve species; lizards, 94 specimens, ten species; snakes, 16 specimens, seven species; turtles, three specimens, one species.

The following extracts from the field book show date and locality of the collections:

July 19. Journeyed by "autovia" to a point a few miles beyond Presidio, which is situated on the Río Mazatlán about fifty miles south of Mazatlán. Returned to Mazatlán at night. Terrain flat, with low forest.

July 20. Collected in the general area about two miles east of Mazatlán. A low rocky hill was visited. Rain pools in this same vicinity were visited at night.

July 21. Same as previous day.

July 22. No collecting.

July 23. Returned to Presidio and collected within a three-mile radius of the village.

July 24. Collected in the region about Mazatlán, visiting rain pools at night.

July 25. Collected during the morning in series of hills two to five miles east and southeast of the city. Departed for Nayarit in afternoon.

There were a few heavy rains during this time, making rather ideal conditions for collecting amphibians.

The hills near Mazatlán were low; none were visited that reached an elevation above three hundred feet. Consequently there was little variation in the general ecological associations. The rain-pool associations were of a temporary nature.

Sinaloa is a region of importance to students of animal distribution, as it is a boundary between two faunal regions. The fauna of the southern part differs to the extent of at least seventy percent from the fauna of Sonora, which lies to the north. There is no strongly defined dividing line crossing the state, since there is an intermingling of the two faunas through a rather wide area, and much more extensive collecting must needs be done before the limits even of individual species can be accurately determined.

The following species have been reported from Sinaloa. Almost without exception these records are from the southern part of the state in the region about Mazatlán and Presidio, Rosario and Plomosas. A few of the records are questioned.

#### AMPHIBIA

- ? *Leptodactylus melanonotus* (Hallowell)
- Eleutherodactylus mexicanus* (Brocchi)
- Bufo simus* Schmidt
- Bufo marmoratus* Wiegmann
- Bufo debilis* (= *Bufo kelloggi*, sp. nov.)
- Pternohyla fodiens* Boulenger
- Diaglena spatulata* Günther
- Agalychnis dacnicolor* Cope
- Hyla arenicolor* Cope
- Hyla baulinii* Duméril and Bibron
- Hypopachus oxyrhinus* Boulenger
- Microhyla usta* (Cope)
- Rana forreri* Boulenger (= ? *Rana pipiens* Schreber)

#### TURTLES

- Emys ornata* Gray
- Emys pulcherrima* Gray
- Kinosternon hirtipes* Wagler

#### CROCODILES

- Crocodylus acutus* Cuvier

#### LIZARDS

- ? *Spharodactylus torquatus* Strauch (probably introduced)
- Phyllodactylus lanci* Smith
- ? *Phyllodactylus tuberculatus* Wiegmann

*Pteropus mutilatus* (Wiegmann). Introduced.  
*Coleonyx fasciatus* (Boulenger)  
*Anolis nebulosus* (Wiegmann)  
*Anolis utowanae* Barbour  
 ? *Callisaurus ventralis* Hallowell  
*Ctenosaura pectinata* (Wiegmann)  
*Ctenosaura acanthura* (Shaw)  
*Iguana rhinolopha* Wiegmann  
 ? *Holbrookia maculata approximans* Baird  
 ? *Holbrookia propinqua* Baird and Girard  
*Holbrookia elegans elegans* Bocourt  
*Uta ornata lateralis* (Boulenger)  
*Uta bicarinata* (A. Duméril)  
*Uta tuberculata* Schmidt  
*Sceloporus nelsoni* Cochran  
*Sceloporus clarkii boulengeri* (Stejneger)  
*Holoderma horridum* Wiegmann  
 ? *Cnemidophorus scilineatus* Linnaeus  
*Eumeces humilis* Boulenger  
*Eumeces parvulus* Taylor

#### SNAKES

*Geophis redimita* Cope  
*Pseudoficinia frontalis* Cope  
*Ficinia quadrangularis* Günther  
*Rhinochilus antonii* Dugès  
*Lampropeltis annulatus* (Kennicott)  
*Drymarchon corais* (Cuvier)  
 ? *Masticophis flagellum flavigularis* (Hallowell)  
*Masticophis semilineatus* (Cope)  
*Drymobius margaritiferus* (Schlegel)  
*Leptophis diplotropis* (Günther)  
*Natrix valida* (Kennicott)  
*Hypsiglena torquata* (Günther)  
*Tropidodipsas philippii* (Jan)  
*Tantilla bimaculatum* (Cope)  
*Leptodeira punctata* (Peters)  
*Leptodeira maculata* (Hallowell)  
*Trimorphodon bi-scutatus* (Duméril and Bibron)  
*Oxybelis acuminatus* (Wied)  
*Micrurus diastema distens* (Kennicott)  
*Agkistrodon bilineatus* (Günther)  
*Crotalus basiliscus* (Cope)

The earliest collecting done in this region was previous to 1868, on which date a collection, made by Ferdinand Bishoff, was received at the Smithsonian Institution.

A notable collection was that of Alfonso Forrer, who collected at Presidio and Mazatlán about 1885. He obtained the types of several

forms of amphibians, including *Hypopachus oxyrhinus* Boulenger, *Rana forreri* Boulenger, *Pternohyla fodiens* Boulenger and *Diaglena spatulata* Günther, and numerous reptiles, including types of *Eumeces bocourti* (= *Eumeces humilis* Boulenger), *Uta lateralis* Boulenger, and *Ficimia quadrangularis* Günther.

A small collection was made by J. A. Kusehe at "Venodia," Sinaloa, where he obtained a specimen of the rare *Diaglena* and other important specimens.

E. W. Nelson and Edward A. Goldman collected in Sinaloa during parts of 1897, 1898 and 1899. They journeyed through northern Sinaloa from Agiabampo to Culiacán, and from Altata across the state to Chacala, Durango. They also visited the southern part of the state, collecting at Mazatlán, Rosario and Plomosas. Numerous specimens were collected, including the types of *Sceloporus nelsoni* Cochran.

Paul D. R. Rütthling made a small collection at Mazatlán, in 1920.

## AMPHIBIA

### *Scaphiopus couchii* Baird

(Plate XLIV, figs. 1-4)

Nineteen specimens (Nos. 2902 to 2920) of this species were collected on a hill about two miles east of Mazatlán. They were found at night along a path leading up to a deserted gold mine. Kellogg (*loc. cit.*) has reported this species from Acaponeta, Nayarit, about ninety miles to the south of Mazatlán. These specimens appear to be the first record for Sinaloa.

These specimens appear to differ from the typical form in having the skin of the occipital and interorbital region almost completely involved in the ossification of the skull, despite the fact that none appear to be full grown. There are certain other differences such as the width of the "shovel" metatarsal tubercle, the larger size of the eye and the greater width of the skull in specimens of equal snout-to-vent length.

### *Bufo marinus* Linnaeus

A single specimen (No. 951) was routed from under a log of driftwood in the sandy bed of the Mazatlán river at Presidio. It has not previously been reported in Sinaloa, but Kellogg has reported a specimen from Camoa, Sonora, far to the north.

### *Bufo punctatus* Baird and Girard

A single specimen (No. 131) was collected under a rock at the top of a small hill about three miles southeast of Mazatlán. It agrees



with specimens from Sonora and Arizona in color and markings, as well as in most structural characters. Although a small specimen, the supraorbital crests are more strongly developed and the parotoid glands are very much larger (nearly double). The ventral surface has numerous black dots on anterior half.

This is apparently the southernmost point in western Mexico where the species has been found. It has not hitherto been reported from the state of Sinaloa.

*Bufo valliceps* Wiegmann

Seven specimens of a toad (Nos. 373-379) found two miles east of Mazatlán have been tentatively referred to this species. There are, however, differences evident when compared with typical *valliceps* from Oaxaca and Guerrero.

The cranial crests are high, relatively narrow, and edged with black. The tympanum is large, equalling more than half the diameter of the eye. The subocular crest is obsolete or represented only by a few tubercles. The first finger is longer than the second. There is a slight fold or ridge on snout from lip to between nostrils; there is only a faint suggestion of a parietal crest.

The measurements show that these specimens are larger than typical *valliceps*, and may belong to the form briefly described by Cope as *Bufo argillaceus*.\*

Measurements (in mm.) of *Bufo valliceps* Wiegmann

| Number.....                                      | 373 | 379  | 374  | 375 |
|--|-----|------|------|-----|
| Sex.....   | ♀   | ♀    | ♀    | ♀   |
| Snout to vent.....                               | 86  | 83   | 85   | 63  |
| Length of head to posterior edge of tympanum.... | 24  | 24   | 24   | 22  |
| Width of head, greatest.....                     | 29  | 30   | 29   | 25  |
| Width interorbital crests.....                   | 8   | 9    | 8.5  | 7.5 |
| Width upper eyelid.....                          | 7   | 7    | 6.6  | 5   |
| Foreleg.....                                     | 50  | 48   | 48   | 37  |
| First finger.....                                | 8.1 | 8    | 8.6  | 6.5 |
| Second finger.....                               | 7   | 7    | 7    | 5.8 |
| Hind leg (from anus).....                        | 95  | 92   | 95   | 77  |
| Tibia.....                                       | 30  | 30.5 | 28.5 | 22  |
| Foot (to tip of longest toe).....                | 46  | 41   | 44   | 32  |

\* Proc. Acad. Nat. Sci. Phila. 20, 1868, p. 138. This form is regarded as a synonym of *marmoratus* by Kellogg (1932), who had the types available for study.

I have as yet not compared these specimens with the type. It is probable that if this were done other differences would appear which, together with those mentioned, might warrant giving a specific name to this form.

*Bufo kelloggi* sp. nov.

(Plate XLV, figs. 1-3)

*Holotype*. No. 21, EHT & HMS Collection. Two miles east of Mazatlán, Sinaloa, July 21, 1934, E. H. Taylor, collector. *Paratypes*, Nos. 15 to 20, and 22 to 40, Mazatlán, Sinaloa, July 20-21, 1934, E. H. Taylor, collector.

*Diagnosis*. A small species related to *Bufo insidiosus* and *Bufo debilis*, but differing in having rather well-developed supraocular, preocular, postocular, subocular, and canthal crests, all surmounted by conical tubercles, each terminating in a sharp spine; interorbital space strongly concave, becoming more shallow in the intercanthal region; loreal region nearly vertical; the inner palmar tubercle not as large as a subarticular tubercle; median palmar tubercle round, subglobular; parotoid gland large, but low and inconspicuous, broad as long, extending as low on the side of neck as the angle of the jaws, heavily studded with spines. Entire dorsal and lateral surfaces of body and limbs studded with large conical tubercles, terminating in one or more brown-tipped spines.

*Description of the type*. Snout seen from above narrow, short, sharply truncate, the canthi with sharp canthal ridges surmounted by pointed tubercles, the area between forming a V-shaped trough; nostrils lateral, very near the extreme anterior tip of snout; loreal region sloping slightly, slightly concave between nostril and eye; the suborbital ridge continued more or less distinctly to below nostril (sometimes tending to connect by a row of tubercles with the continuation of the canthal ridge in front of the nostril); from a dorsal view the edges of jaws are not visible; the supraorbital ridge semicircular, continuous with a very strong preocular crest which is nearly vertical, but does not reach the subocular crest; postocular crest not always well developed, while the supratympanic crest is not or barely defined; tympanum moderately distinct, its vertical diameter about one third the longitudinal diameter of the orbit; length of snout from in front of eye about three fifths of the length of the orbit; width of upper eyelid about three fourths the narrowest distance between the supraocular crests; interorbital and intercanthal region concave, with spiny tubercles, the area between

the junction of the supraorbital and canthal crests somewhat inflated; lower edge of the upper lip with a series of small, low tubercles forming a slight ridge; in lateral profile the snout projects much beyond the mouth and slopes back from the tip to the mouth rather gradually; the ventral outline of the upper jaw is distinctly not circular—the sides if projected would form a right angle.

Tongue narrow, elongate, rounded but not nicked behind; choanae large, separated by a distance of little less than distance between nostrils, partly concealed by the overhanging jaw (male with a median vocal pouch).

The parotoid gland is large but not strongly salient, attaining its greatest width very near its most anterior point, the dorsal border only slightly notched.

Body covered with prominent spinose tubercles on dorsal and lateral surfaces, smaller on latero-ventral abdominal surface, becoming still smaller medially; on breast the tubercles are more prominent, each with a distinct spine. Limbs, save in postfemoral and posthumeral regions, strongly spinose; first finger slightly shorter than second; inner palmar tubercle small, no larger than the subarticular tubercles; hind leg short, the tibiotarsal articulation not or barely reaching axilla; legs folded at right angles to body, the heels narrowly fail to touch; femur involved in the body skin nearly two thirds of its length; toes about one third to two fifths webbed; two small metatarsal tubercles.

*Color in life.* Above yellowish-brown with numerous blackish-brown markings, sometimes tending to form elongate spots; an irregular, light yellowish-brown stripe from labial border to groin, more or less interrupted in parotoid region; legs and arms marked with heavy bars, continuous when limb is folded; foot strongly spotted; below dull brownish-yellow with scattered spots of blackish on the lateral abdominal region and across the pectoral region; chin immaculate yellowish (in males the chin is dark grayish to blackish).

Measurements (in mm.) of *Bufo kelloggii* sp. nov.

| Number...<br>Sex.                                      | 21<br>♀ | 28<br>♀ | 20<br>♀ | 41<br>♀ | 40<br>♀ | 24<br>♀ | 37<br>♀ | 38<br>♂ | 27<br>♂ | 22<br>♂ | 35<br>♂ |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Snout to vent.....                                     | 43      | 44      | 42      | 41      | 40      | 42      | 41      | 37      | 36      | 37      | 38      |
| Width of head at tympanum.....                         | 16      | 15.5    | 15      | 14.5    | 14.3    | 16      | 15      | 13      | 14.2    | 16      | 15.2    |
| Length of head from posterior edge of tympanum.....    | 11      | 10.8    | 10.6    | 10      | 9       | 11.6    | 10.2    | 9.5     | 10      | 9.8     | 9.2     |
| Diameter of orbit from pre- to postorbital crests..... | 5.3     | 5.5     | 5.6     | 5       | 5.2     | 5       | 4.8     | 4.7     | 4.8     | 4.9     | 5       |
| Snout from preorbital crest.....                       | 3.3     | 3.1     | 3.2     | 2.5     | 3       | 3.8     | 3.5     | 3.1     | 2.9     | 2.8     | 3.2     |
| Interorbital width from top of crests.....             | 4.2     | 4.2     | 4       | 4       | .....   | 3.8     | 3.5     | 3.6     | 3.4     | 3       | 3.5     |
| Eyelid.....  | 3.3     | 3.7     | 3.8     | 3.4     | .....   | 3.2     | 3.4     | 3.2     | 3.1     | 3       | 3       |
| Foreleg.....   | 22      | 21.5    | 22.3    | 21      | .....   | 22.5    | 21      | 17.5    | 19      | 21      | 19      |
| First finger.....                                      | 2.9     | 3       | 3.5     | 2.5     | .....   | 2.8     | 2.8     | 2.1     | 2.5     | 2.7     | 2.1     |
| Second finger.....                                     | 3.1     | 3.2     | 3.6     | 3.1     | .....   | 3.2     | 3.2     | 2.3     | 2.7     | 3       | 2.3     |
| Hind leg from anus.....                                | 47      | 46      | 47.2    | 45      | .....   | 46      | 45      | 39      | 40      | 40.2    | 38      |
| Tibia.....   | 15      | 15      | 15      | 14      | .....   | 15      | 14      | 13      | 13      | 13.2    | 12      |
| Foot.....  | 22      | 21.6    | 22      | 21      | .....   | 21      | 22      | 18      | 18.6    | 19      | 21      |

*Variation.* The large series displays a remarkable constancy in color markings, body proportions and the general character of the crests and spiny tubercles. There seems to be some variation in the length of the first two fingers; usually the second is a little longer, but occasionally they are very nearly the same length in some younger specimens.

*Relationship.* This small toad is most closely related to *Bufo debilis* and *Bufo insidiosus* Girard. From *Bufo debilis* (Eastern Texas and Tamaulipas) the present species differs in having a slightly larger orbital diameter; in having the cranial crests better developed and studded with sharply pointed tubercles; in having a shorter leg, the tibio-tarsal articulation reaching only to axilla; in having better developed spiny tubercles on the dorsal, lateral and ventral surfaces of the body; a less prominent, somewhat differently shaped parotoid; the interorbital width distinctly less; and in a totally different color pattern. (See plate XLV, figs. 4-6.)

From *Bufo insidiosus* Girard (Kansas, Texas, New Mexico, Chihuahua, Durango and Zacatecas) it differs in the presence of the cranial crests (lacking or with only an occasional faint trace of crests in *insidiosus*) in having shorter hind legs, a shorter snout, larger eye, narrower head and narrower interorbital width, a differently shaped parotoid and a totally different dorsal color pattern. It has very much larger and more numerous spiny tubercles on dorsal and lateral surfaces; the inner palmar tubercle is less developed, as are the metatarsal tubercles; the webbing between the toes is slightly more extensive. The color pattern is entirely different. (See plate XLV, figs. 7-9.)

*Remarks.* The specimens were collected in the daytime under rocks and logs, and at night hopping about on a small flat near a rain pool only a few hundred meters from a tidewater bay. They were not heard calling.

The revival of the name *insidiosus* for the small toad occupying a very extensive territory extending from Kansas south through New Mexico, Oklahoma, Texas, Coahuila, Chihuahua, Durango and Zacatecas is, I believe, wholly warranted. Specimens from Kansas have the same characteristics, including almost the same identical color pattern as those from the southern part of the range in Zacatecas. Large series are at hand for comparison.

The species is named for Dr. Remington Kellogg of the United States National Museum, whose excellent work, "Mexican Tailless Amphibia," appeared in 1932.

*Leptodactylus occidentalis* Taylor

*Leptodactylus occidentalis* Taylor. Trans. Kansas Acad. Sci., 39, 1936, pp. 349-352.

Three specimens of this species were collected near Mazatlán. One had been swallowed and partially digested by a snake, *Leptoderia personata* (No. 566). These specimens agree with typical specimens from Tepic, Nayarit, from which locality the species has recently been described.

*Pternohyla fodiens* Boulenger

*Pternohyla fodiens* Boulenger, Ann. Mag. Nat. Hist., Ser. 5, X, No. 58, 1882, pp. 326, 327. (Type description; type locality, Presidio, fifty miles from Mazatlán, Sinaloa; Forrer, collector.)

A series of fourteen specimens, Nos. 1368-1381, were collected about two miles east of Mazatlán. The specimens were hopping about in the fields, usually not far from rain pools. They were very wary and the approach of my light was a signal for them to make for thick clumps of shrubbery where they were safe. Only very alert action on my part prevented the escape of the specimens taken. All are quite typical.

Kellogg reports the species from Mazatlán and Rosario in Sinaloa.

*Diaglena spatulata* (Günther)

Two specimens (Nos. 1423, 1424) of this rare species were collected a few miles to the south of Presidio, which is the type locality. Kellogg (*loc. cit.*) was able to discover only four specimens in collections; the three cotypes from Presidio, and a fourth specimen from "Venodio,"\* Sinaloa.

Thus the known distribution is in a very restricted district in southern Sinaloa.

Intensive collecting in Nayarit by H. M. Smith and myself, and in Colima by Smith, failed to discover the species in these localities. My Presidio specimens were taken under a small piece of a log on the edge of a shallow stagnant pool. Both were crouched together, and when picked up they remained motionless. The axis of the head was turned nearly at right angles to the body. Whether this is indicative of a phragmotie habit as suggested by Barbour† for

\* I suspect that this should be Venadillo (pronounced somewhat like "Venodio," which name is not listed in the Directorio General de Correos, but which does list Venadillo, Mazatlán, Sinaloa).

† Barbour, Reptiles and Amphibians, their habits and adaptations. Houghton Mifflin Co., Boston and New York, 1926. p. 74.

certain related genera, I cannot say. J. Aug. Kusche, who collected a specimen (No. 73266 U. S. N. M.), recorded that it was collected in a termite nest in a tree.

Both of my specimens are males. One, obviously, had been calling the previous night, as the vocal sac was much distended and folded. In the other the throat showed no external evidence of a sac.

The contents of the stomachs were examined. In one there was a single small beetle; in the other were found one beetle and fragments of a blattid. In the mouth were four, rather large, brown ants.

The eyes of this form appear peculiar in that the eyeball appears to be directed somewhat forward rather than laterally. Both of these specimens have the eye so turned, and Günther's figure shows somewhat this same condition. I failed to observe the eye in the living specimens.

The measurements of Nos. 1424 and 1423 are, respectively (in millimeters): Snout to vent, 74, 71; length of casque, 29, 27.5; width at eyes, 22, 19; length of arm, 37.5, 36; length of legs, 87-86, 81-83; tibia, 28, 27; foot, 37, 35; diameter of tympanum, 3, 3; diameter of eye, 7.5, 6; length of third finger, 19, 18.

#### *Agalychnis dacnicolor* Cope

*Phyllomedusa dacnicolor* Kellogg, Bull. U. S. Nat. Mus., No. 160, 1932, pp. 143-144.

A series of twenty-nine specimens (Nos. 1306-1334, July 21-24) was collected in the general vicinity of Mazatlán, for the most part one to two miles east of the city. All were found in shrubbery or trees near rain pools. All the specimens were grass-green in life, often tending toward bluish-green. When preserved most of them changed to a bluish or violet shade. Eggs were found and pairs were found clasping. They did not appear to be afraid of the light, and were easily collected.

Kellogg reports the species from Rosario, Presidio and Mazatlán in Southern Sinaloa.

#### *Hyla baudinii* Duméril and Bibron

*Hyla baudinii* Kellogg, Bull. U. S. N. M. No. 160, 1932, pp. 160-163.

A single specimen (No. 658) was taken from the throat of *Masticophis lineatus* collected two miles north of Presidio. The frog had apparently been hidden among the dead leaves of a palm tree, from which I shot the snake. The frog is a large female measuring 75 mm. snout to vent. The tibiotarsal articulation reaches the eye. The sides are reticulated with brown, enclosing yellowish spots. The



posterior femoral region displays a darker reticulation enclosing lighter yellowish spots. Kellogg reports specimens from "north of Mazatlán" (1) and Plumosas (2).

### *Hyla smithii* Boulenger

*Hyla smithii* Taylor, Trans. Kans. Acad. Sci. XXXIX, 1936.

A single specimen (No. 2174) was taken on a floating plant in a rain pool about two miles east of Mazatlán. About this same pool were found *Pternohyla fodiens*, *Agalychnis dacnicolor*, *Microhyla olivacea*, *Bufo kelloggi* and *Bufo valliceps*. Others were heard calling. The specimen in life was canary to lemon-yellow with a few darker dorsal spots among the very numerous minute dark flecks (under the microscope many of the minute spots are star-shaped). The specimen is an adult male with the vomerine teeth well developed. Snout to vent, 22 mm.

### *Microhyla olivacea* (Hallowell)

*Engystoma olivaceum* Hallowell, Proc. Acad. Nat. Sci. Phila., 1857, p. 252. (Type description; type locality "Kansas and Nebraska.")

*Gastrophryne olivacea* Smith, Amer. Mid. Nat., XV, 1934, No. 4, pp. 501-505.

I have tentatively associated with this species three small microhylids (Nos. 1236 to 1238) collected about two miles east of Mazatlán under rocks at the base of a small clay hill. When compared with Texas specimens of equal size they differ in having a narrower head, the snout a little more projecting and more flattened. They are somewhat darker and on the side, from snout to groin, the pigment tends to form a darker broken line. There is a slight difference in the shape of the foot and the metatarsal tubercle is slightly more salient. They differ somewhat less from a series of specimens collected by Hobart Smith and David Dunkle at Conejos, Durango. None of the three specimens approaches the maximum size of *olivacea*. A larger, more representative series may demonstrate that these and perchance other characters warrant a specific designation for the coastal form. If properly associated with *olivacea* these records extend the known range some 200 miles farther to the southwest.

### *Rana pipiens* Schreber

Four specimens were collected: No. 2926, three miles east Mazatlán, July 20; 2927-2928 near Presidio, July 24; 2929 near Mazatlán, July 25. No. 2926 is a female measuring 125 mm. snout to vent. The ovaries are packed with ripe eggs. Kellogg (*op. cit.*) reports specimens from several localities in Sinaloa.



*Phyllodactylus lanei* Smith

*Phyllodactylus lanei* Smith, Univ. Kansas Sci. Bull., XXII, April 15, 1935, pp. 125-132, plate XXV, fig. 3 (photograph of type). (Type description; type locality, Tierra Colorada, Guerrero. E. H. Taylor and H. M. Smith, collectors.)

Three specimens (Nos. 534, 535, and 704, July 21-24, 1934) were collected about two miles east of Mazatlán, Sinaloa. H. Smith has studied these specimens and has referred them to this species. All are immature, but they agree well with juveniles of the series from Guerrero.

*Coleonyx fasciatus* (Boulenger)

(Plate XLVI, fig. 2)

*Eublepharis fasciatus* Boulenger, Cat. Liz. Brit. Mus., 2d Ed., 1, 1885, p. 234. (Type description; type locality "Ventanas [Durango]; A. Forrer, collector); Günther, Biologia Centrali-Americana Reptilia and Batrachia, April, 1893, p. 84, pl. xxxi, fig. a (entire animal natural size and head).

*Coleonyx fasciatus* Taylor, Univ. Kans. Sci. Bull., XXII, Apr. 15, 1935, pp. 203-205.

Elsewhere (*loc. cit.*) I have reported on this specimen collected about ten miles south of Presidio, Sinaloa, June 19, 1934. It has the following measurements: Snout to vent, 59 mm.; tail, regenerated, 53 mm.; width of head, 10 mm.; head length, to angle of jaw, 15 mm.; foreleg, 17 mm.; hind leg, 22.5 mm.

*Ctenosaura pectinata* (Wiegmann)

*Ctenosaura pectinata* Bailey, Proc. U. S. Nat. Mus., 73, 1928, pp. 24-27; Smith, Univ. Kansas Sci. Bull., XXII, April 15, 1935, pp. 134-137.

The following specimens were taken: Nos. 525-527 ten miles south of Presidio, July 19; No. 583 near Mazatlán, July 20, and Nos. 654-656 near Presidio, July 21.

Smith (*loc. cit.*) discusses these specimens.

*Iguana rhinolopha* Wiegmann

*Iguana rhinolopha* Smith, Univ. Kansas Sci. Bull., XXII, April 15, 1935, pp. 134-137.

Four specimens, Nos. 650-653, were collected at Presidio, on the edge of the Rio Mazatlán, July 22, 1934.

Smith (*loc. cit.*) reports on these specimens.

*Holbrookia elegans elegans* Bocourt

*Holbrookia elegans* Bocourt, Miss. Sci. au Mexique; Rept. Batr., Liv. 3, 1874, pl. XVII bis, fig. 8, 8a, dorsal and ventral view of head. (Type description; type locality Mazatlán, Sinaloa.)

*Holbrookia elegans elegans* Smith, Univ. Kansas Sci. Bull., XXII, April 15, 1935, pp. 191, 194, pl. XXVII, fig. 2 (photograph dorsal view), and XXVIII, fig. 5 (femoral pores).

A series of six specimens, Nos. 643-648, were taken near Presidio, Mazatlán, Sinaloa, July 22, 1934.

Smith (*loc. cit.*) has commented on this series.

*Uta tuberculata* Schmidt

*Uta tuberculata* Schmidt, Amer. Mus. Nov., No. 22, 1921, p. 4. (Type description; type locality, Colima, state of Colima, Mexico; Rütthling, collector.) Smith, Univ. Kan. Sci. Bull., XXII, April 15, 1935, pp. 171-172, pl. XXVI, fig. 1 (photograph of E. H. T. Collection, No. 552, male).

A single specimen, No. 552, was collected about fifteen miles south of Presidio, Mazatlán, Sinaloa. Smith (*loc. cit.*) has reported on this specimen.

*Anolis nebulosus* (Wiegmann)

Three specimens, Nos. 553, 554, taken near Presidio, and No. 761, near Mazatlán, are referred to this species.

Body slightly compressed, the forehead concave; supraorbitals are in contact and continued forward as two divergent frontal series, but not forming a frontal keel; normally three supraoculars separated from the supraorbitals by a row of granular scales; four rows of loreals; four canthals; a slight nuchal crest; occipital large, very much larger than auricular opening; six or seven labials to below middle of eye; gulars slightly keeled; ventrals keeled, slightly smaller than the dorsals which pass rather gradually into the granular lateral scales; enlarged postanals; fourteen scales under the second and third phalanges of fourth toe; gular appendage large, reaching beyond the thorax, grayish or with a pinkish tinge. Markings very indistinct save that radiating lines about the eye are evident.

*Sceloporus nelsoni* Cochran

*Sceloporus nelsoni* Cochran, Jour. Washington Acad. Sci. XIII, 1923, May 4, pp. 185-186. (Type description; type locality, Plomosas, Sinaloa, Mexico. Nelson and Goldman, collectors.)

The following specimens collected in Sinaloa are referred to this species: Nos. 577, 578 about two miles east of Mazatlán, July 20, 1934; Nos. 755-760 about four miles southeast of Mazatlán, July 25, 1934.

The relationship of this form is obviously with *pyrocephalus*, but the differences pointed out by Doctor Cochran, while small, are numerous and certain of them rather constant.

The males of my series have, usually, a well-defined black shoulder spot extending somewhat on the arm, while on the breast on either side is an orange or brick-red spot touching the black spot and partially surrounded by darker color. The anterior part of the abdomen is whitish or yellowish. The chin is whitish and bluish-gray, the white forming a number of converging narrow lines usually continuous with lines extended across labials and side of head. These lines are narrower and more numerous than those in *pyro-*

*cephalus*. The belly is black medially, bordered by bluish color on each side, this fading to dim yellowish-brown which appears lavender in preserved specimens; a darker lateral band with a few yellowish flecks usually present. The femoral pores vary between 15 and 18, 16 and 17 occurring most frequently.

The dorsal color is grayish-brown, with two olive, dorsolateral lines, the edges of which are not clearly defined; tail with fourteen narrow light annulations, immediately in front of which the ground color is darker than remaining interspace; a dark light-ringed spot on posterior part of occipital scale.

Females are grayish-brown, the dorsolateral stripes scarcely or not discernible and with small, paired, indefinite, dark spots present; belly immaculate whitish (of a greenish cast in one); chin less distinctly striped, the dark shoulder spot and the orange breast spot less distinct than in males (or obsolete). The tail is much more strongly banded, the whitish or cream rings widening dorsally.

### *Sceloporus utiformis* Cope

*Sceloporus utiformis* Cope, Proc. Acad. Nat. Sci. Phila., 1864, pp. 177. (Type description; type locality Colima, Colima, Mexico); Bocourt, Miss. Sci. au Mexique; Rept. Batr., Liv. 4, 1874, pp. 208-210, pl. XVIII bis, fig. 6, 6a, 6b (dorsal view of head, detail of ear, and dorsal scale) (Colima).

A single specimen (No. 555) of this very well-defined species was taken about twelve miles south of Presidio, July 19, 1934. The specimen was discovered in the bed of a dry creek and was the only one seen during my two days collecting near Presidio.

Compared with Cope's type description the number of femoral pores is larger, 16-17 in this specimen while the type has but 13. The description states, "Ten longitudinal rows of large, highly keeled, shortly mucronate dorsal scales, separated by many lateral series of minute flat scales, from the smaller entire edged abdominals." This specimen has approximately eight rows on the neck, ten on the posterior part of the body, while near the middle there are fourteen rows, the large scales pushing down on the sides. It is probable that this condition may also obtain in the type.

The ear opening is very large and the tympanum relatively superficial; the lateral nuchal pocket is especially deep, and the preauricular lobules much reduced. The head scales are distinctly rugose.

Strongly reddish-brown above, with ten narrow, irregular transverse dark bands, edged posteriorly with greenish or yellowish-white, the light edging formed by small white spots that are not continuous; this light color appears on the sides as numerous irregular white flecks each involving several granular scales. The tail is completely

encircled by brownish bands four scales wide, separated by wider lighter bands; head variegated brown. Upper labials traversed by six greenish-white, vertical stripes which continue on the throat and chin, those below eye strongest and separated by deeper brown interspaces. Limbs barred with wide dark and narrow greenish or yellowish-white bands. Throat gray, reticulated with white; belly and under side of limbs dirty white.

*Sceloporus clarkii boulegeri* (Stejneger)

*Sceloporus boulegeri* Stejneger, North Amer. Fauna, No. 7, May 1, 1893, p. 180, pl. 1, fig. 5a-c. (Type description; type locality, Presidio, fifty miles from Mazatlán, Sin. Forrer, collector.)

*Sceloporus clarkii boulegeri* Burt, Trans. Micros. Soc., Vol. LIV, No. 2, April 1935, pp. 171, 172 (part) (confuses *S. horridus oligoporus* and *S. melanorhinus* with *boulegeri*).

The following specimens were obtained: Nos. 528-534 ten miles south of Presidio (sixty miles south of Mazatlán), July 19; No. 587, two miles east of Mazatlán, July 21; Nos. 667-669 (skeletons) and 670-683 about two miles north of Presidio, July 23.

The specimens of this series, with the exception of No. 587, are topotypes. The femoral pores in twenty specimens (40 counts) have the following frequency: 8 occurs seven times; 9, seventeen times; 10, fourteen times and 11 twice, or an average of 9.02. Burt's (*loc. cit.*) comments on the femoral pores are due to his confusion of *Sceloporus horridus oligoporus* (Cope) (Klauber No. 7335 Zihuatenejo, Guerrero, with two femoral pores) and *Sceloporus melanorhinus* (Klauber No. 7336 Zihuatenejo, Guerrero, with twenty-one femoral pores, and No. 10153 Petatlan, Guerrero, with a high number of pores). The femoral pores are not more variable in *Sceloporus* than in other forms.

All the specimens were shot from large trees that stood isolated in pasture fields. Each of these scattered trees harbored rather large colonies. Very large series could have been taken had I so desired, as many specimens were left unmolested.

*Cnemidophorus sacki* Wiegmann

*Cnemidophorus sczlineatus gularis* Burt, U. S. Nat. Mus. Bull., No. 154, 1931, pp. 97-122 (part).

*Cnemidophorus sczlineatus sackii* Burt, Proc. Biol. Soc. Wash., 44, June 29, 1931, pp. 73-78.

In endeavoring to determine the proper name for the *Cnemidophorus* from southern Sinaloa, I have found it necessary to review the specimens of *Cnemidophorus gularis* and *Cnemidophorus sczlineatus* in the collections of Kansas University (about 200 of the former and 500 of the latter) and especially specimens from Texas and

Oklahoma, where the ranges occupied by these species overlap a known distance of more than five hundred miles. Special attention was given those specimens from Oklahoma and Texas with a view of discovering intergradation between these forms, a condition which I had not observed during extensive collecting in Texas. I have had available about 200 specimens from these states. I am wholly unable to discern intergradation in the pertinent characters (which may be used to separate the species) that suggests in any way a crossing of these species.

There obtains in adults of both *sexlineatus* and *gularis* strong sexual dimorphism in color and markings. The male *sexlineatus* has the ventral surface colored a very light blue in life, the color not or but slightly more intense on the throat; however, this blue color is lost in preservation and various changes result, depending upon the preservative used. The throat usually becomes a different shade of blue and the abdomen seems to be darker blue on the sides. In formalin the throat may become blackish and the abdomen likewise. The females of this form are rather creamy yellow ventrally, which color remains or becomes whitish in alcohol. In formalin the sides of the abdomen are a little darker. The maximum size in Texas and Oklahoma probably rarely exceeds 75 mm. snout to vent.

The *gularis* of this region have a strongly-defined pinkish to reddish-pink coloration on chin and throat often extending to the enlarged scutes on the breast; the ventral surface of the body of adult males is dark blue-black anteriorly, becoming somewhat bluish posteriorly, and with white, cream or bluish-white spots present, especially on the outer part of abdomen. Undersides of the hind limbs (partially), anal region and often the underside of tail are immaculate cream.

The females, however, are without either the pink throats or bluish bellies and as such are very often confused with *sexlineatus*. Data from these misidentified females taken with data from *sexlineatus* bring about a disheartening confusion which suggests intergradation.

While it is not certain, it seems highly probable that Burt (*loc. cit.*, 1931) has confused the females of *gularis* with both sexes of *sexlineatus*, since he does not note this sexual dimorphism.

He states (p. 83): "At the point of intergradation with *gularis* there is a complete transition from the characteristic granules on the post-antebrachium of *sexlineatus* to the larger, better developed, polygons that are usually found in that form" (*gularis*). This statement is wholly true when applied to series containing both the



ventrally unmarked females of *gularis* and males and females of *sexlineatus*, and is not true when applied to *sexlineatus* males or females of the material available in the Kansas University collections.

In consequence, I believe that *gularis* should not be associated with *sexlineatus* as a subspecies as Bocourt proposes (Mission Sci. Mexique 1874), Cope (1900) and followed by Burt (1931). The application of the name *C. sexlineatus* I believe should be limited to the small *Cnemidophorus* described by Linnaeus, occupying territory over a wide area in the eastern and central United States and as far west as Texas, Oklahoma, Kansas, Colorado and New Mexico. It may occur in northern Mexico.

The cnemidophori obtained in Sinaloa include the following: Nos. 535-551, ten miles south of Presidio, July 19; 581, 588-590, along edge of tide flats near Mazatlán, July 20 and 21; 684-688, in the vicinity of Presidio, July 23; 750-754, near Mazatlán, July 24.

It is with some hesitancy that I am associating the above name with the present species. Burt (Proc. Biol. Soc. Wash., Vol. 44, June 29, 1931, pp. 73-78) has recently published additional details of the type of *C. sacki* which Parker had observed on the type. These details apply to certain of the specimens before me. If these are not typical they would certainly have a subspecific relationship with *sacki*.

The specimens present the following characters: A six-lined form, the lateral line extending to the tip of the snout, crossing the suboculars, passing above the ear and terminating in the groin. The dorsolateral line arises at the last superciliary and continues a considerable distance on the tail. The dorsal lines are less distinct and are separated by a ground color much lighter than the dark-brown color between the other lines. There are small dots between the lateral and dorsolateral lines, males and females showing little or no sexual dimorphism. In larger specimens the lines break up into series of white dots which with the intervening dots tend to form light, broken, transverse bands. In still older specimens the area occupied by the longitudinal lines in the younger specimens now appears as the ground color, with a tendency to form interrupted dark transverse bands. The ventral surface of chin and throat is bluish-gray in adult males and females, rarely with a trace of pinkish. The bellies are deep blue-black with numerous bluish-white spots. The tail beneath has some bluish or blackish spotting.

The specimens from the tidewater flats have somewhat less dark

color below, but it is strongly evident on the sides. The dorsal linear markings do not break up into dots; the upper surface of the hind limbs are uniformly colored. The numerous spots on the Presidio specimens are lacking. The anterior continuation of the lateral line across the loreal region is strongly pronounced in young and old. The chin and throats are more strongly contrasting black and yellow. The enlarged scales on the gular fold are yellow-cream in all.

The largest size noted in the series is 119 mm. snout to vent, while several specimens measure 110 mm. or more.

Measurements (in mm.) and scale counts of *Cnemidophorus sacki* Wiegmann

| Number, E. H. T. Collection..... | 540    | 536    | 539    | 535    | 589    | 548    | 541    |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Snout to vent.....               | 119    | 114    | 110    | 110    | 110    | 108    | 105    |
| Snout to occiput.....            | 28     | 24     | 28     | 24     | 24     | 23     | 23.5   |
| Snout to ear.....                | 30     | 25.5   | 28     | 26     | 25     | 24     | 25     |
| Breadth of head.....             | 21     | 20     | 20     | 18     | 20     | 15     | 17     |
| Interorbital width.....          | 13     | 11.2   | 12     | 11     | 12     | 10     | 11     |
| Hind leg.....                    | 76     | 76     | 77     | 73     | 72     | 74     | 74     |
| Tibia.....                       | 25     | 24     | 25     | 22     | 21     | 23     | 23     |
| Fourth toe.....                  | 25     | 25     | 27     | 25     | 22     | 26     | 25     |
| Lamellae, fourth toe.....        | 34     | 34     | 29     | 31     | 34     | 35     | 31     |
| Femoral pores.....               | 20, 22 | 20, 21 | 20, 20 | 18, 19 | 20, 21 | 18, 19 | 17, 17 |
| Dorsal scale rows.....           | 113    | 118    | 89     | 107    | 100    | 91     | 105    |
| Ventrals (long).....             | 36     | 37     | 33     | 35     | 34     | 35     | 36     |

*Constrictor constrictor imperator* (Linnaeus)

Two specimens were taken: No. 691, near Presidio, and No. 711, two miles east of Mazatlán. The latter specimen is alive at this date in the laboratory of zoölogy at University of Kansas.

*Masticophis semilineatus* (Cope)

*Bascanium semilineatum* Cope, Proc. U. S. Nat. Mus., XIV, pp. 622, 626. Type description; type locality Colorado river bottom. Schott, collector.

A large specimen of this species was collected about two miles east of Mazatlán, July 20. It was observed crawling in sparse brush, and when sighting me, it stopped, reared its head and remained motionless for some time. Certain other specimens seen, apparently of this species, escaped in brushy ground.

Ortenburger (1928) cites previous records for Mazatlán by Van Denburgh (1897), and for Presidio by Günther (1894).

My specimen, a male, presents the following characters: Ventrals, 192; caudals, 109+; scale formula, 19-17-17-13-13; upper labials, 8-8; lower labials, 9-10; preoculars, 2-2, touching frontal; postoculars, 2-2; temporals, 2+2+3+2; loreal, 1-1 (fused partially with preocular); head length to jaw angle, 42 mm.; to end of parietals, 33 mm.; supraorbital width, 15 mm.; total length, 1685+ mm.; tail 470+ mm.; maxillary teeth, 20-20; mandibular, 21-22; nasal divided; frontal equal to distance to end of snout; eye diameter reaches edge of posterior nasal.

In general, the color is typical. The ventrals have series of punctate spots bordering their edges, absent from a few. On the chin and throat the spots are much larger and darker.

#### *Masticophis lineatus* (Bocourt)

*Bascanion linatum* Bocourt, Miss. Sci. au Mexique, Rept., Liv. 12, 1890, pp. 697, and 700-701, pl. XLVIII, fig., 1, 1a, 1b, 1c. (Type description; type locality, "Mexico." Collectors, Alfredo Dugès and Boucard.)

*Masticophis lineatus* Ortenburger, Mem. Univ. Michigan Mus., I, 1928, pp. 134-138, pl. XXV, figs. 3, 4, 5.

This little-known form is represented by three specimens, collected July 23 at a small pool beside the railway, about one mile north of Presidio (fifty miles south of Mazatlán). A fourth specimen, collected at the same time, escaped from my hotel room in Mazatlán when I was preparing to preserve it, and was crushed in the street a few moments later. It was not preserved. No. 663 was found in a tree swallowing a specimen of *Hyla baudinii*. The frog was recovered alive.

The three specimens, Nos. 662 ♀, 663 ♂, 664 ♂, present the following characters, respectively: Ventrals, 184, 184, 185; subcaudals, ?, 112, 120; upper labials, 8-8, 8-8, 8-8; lower labials, 10-11, 10-10, 10-10; preoculars, 2-2, 2-2, 2-2 (the large upper scale of each snake shows a strong suture partially dividing the scale); postoculars, 2-2, 2-2, 2-2; scale formulae, 20-17-17-13-13, 19-17-17-13-13, 19-17-17-13-13; mandibular teeth, 18-19, 18-18, 18-18; maxillary teeth, 18-18, 18-19, 18-18; head length to angle of jaw, 42, 42, 40 mm.; length to end of parietal, 28, 30.5, 27.5 mm.; interorbital width, 14, 15, 14 mm.; total length, 960 (incomplete), 1346, 1376 mm.; tail, 180 (incomplete), 380, 385 mm.

All three have four scales touching the first pair of chinshields which are slightly longer than second pair and separated by a few small scales; a single loreal, nearly twice as long as high; preoculars



separated from frontal; the seventh labial exceeds but little the size of the eighth (in one, smaller); the temporals are very irregular, but only a single anterior present, followed by two or three; the frontal is as long as, or only minutely less than, its distance to the tip of the snout; the parietals usually about one fifth longer than frontal; the eye equals its distance from nostril or is but slightly less; internasals are from two thirds to three fifths as long as the prefrontals.

The specimens agree in colors and markings. Above they are grayish-tan, save on the anterior part of body where the color is a strong lavender- or orchid-gray for a distance of six or eight inches behind head. There are faint suggestions of very narrow pinkish-white bars with some darker dots bordering them. The top of head is uniform dark amber; a cream spot present on the preocular; most of the upper labials are yellowish; a faint vertical light line crosses the seventh labial and extends above it; dorsal scales with fine black dots on apex, missing on some lateral scales, and absent on tail. Below yellow, the gray of sides encroaching on the ventrals; edges of ventrals on neck region, rosy, and on caudals a rosy or pinkish line, becoming lavender towards tip.

*Natrix valida* (Kennicott)

*Regina valida* Kennicott, Proc. Acad. Nat. Sci. Phila., 1860, p. 334. (Type description; type locality, Durango, Mexico.)

*Tropidonotus validus* Günther, Biologia Centrali-Americana, Reptilia and Batrachia, July 1894, p. 134. (Presidio and Mazatlán, etc.)

Four specimens were collected in the vicinity of Presidio, July 19 and 22. All were in the immediate vicinity of water.

The specimens Nos. 563, 564, 640, 641, present the following characters respectively: Sex, ♀, ♂, ♂, ♀; ventrals, 141, 143, 142, 146; subcaudals, 72, 76, 77, 73; supralabials, all 8-8; infralabials, all 10-10; preoculars, 1-1, 1-1, 1-1, 2-2; postoculars, 3-3, 3-3, 3-3, 2-2; temporals, 1+3+4, 1+2+4 : 1+3+4, 1+2+3 : 1+3 : 1+2+3; labials touch chinshields, all 5; loreal, 0-0, 1-1, 1-1, 1-1; anal, all, divided; scale formulae, 19-19-17-17, 20-19-17-17, 20-19-17-16, 19-19-17-17; (measurements in millimeters) head length, 35, 13.2, 24, 26; length to parietal, 25, 12, 18, 18; supraorbital width, 8, 5, 6, 8; length, 870, 308, 605, 635; tail, 207, 80, 155, 156; maxillary teeth number, of Nos. 563 and 640, 24-23, 24-24; mandibular teeth, 25, 25.

The three smaller specimens are uniform gray in color, and show two alternating rows of black spots on each side anteriorly. There

is a dim lateral line on second and third scale rows, below which the color is slightly darker; first six supralabials with black posterior edges.

*Leptodeira maculata* (Hallowell)

*Leptodira personata* Cope, Proc. Acad. Nat. Sci. Phila., 1868 (1869), p. 310. (Type description; type locality, "Mazatlán, Western Mexico"); Günther, Biologia Centrali-Americana, Reptiles, May, 1895, pp. 171, 172, pl. LIV, figs. A (adult, natural size) and B (young).

Two young specimens, No. 566 (ten miles south of Presidio, July 19) and No. 666 (one mile north of Presidio, July 23), were taken. Each was found hidden under a log in relatively dry situations. These present the following characters: Ventrals, 165, 167, subcaudals, 72, 68; supralabials, 8-8, 8-8; infralabials, 9-10, 10-10; preoculars, 1-1, 2-2 (the lower very small); temporals, 1+2+3, 1+1+2+3 (the anterior temporal segmented); anal, 2, 2; length, 280, 249 mm.; tail, 60, 54 mm.; spots on body, 24, 25; on tail, 12, 13; scale rows, 21-21-21-17; 21-23-23-17.

They agree in the following characters: Fourth and fifth suboculars enter the orbit; length of eye equal to its distance from center of nostril; loreal slightly longer than high; posterior chinshields about as long but somewhat more slender than anterior; five labials touch anterior chinshields; frontal with sides nearly parallel, in contact with the preocular (on one side in No. 666 it is minutely separated), equal to its distance to end of snout; scales with two apical pits.

In both specimens the blotches are somewhat diagonal across the back, and black in color. The dorsal ground color is faun. In No. 666 there is a foreshadowing of the darkening of the ground color, as occurs in the adult, by the appearance of black flecks low on the sides. The head is dark, and the parietals are partially outlined with yellowish-white, and somewhat lighter along the sutures of the other head scales; labials and ventral surface white. The nuchal collar is four or five scales wide, followed by the widest dorsal blotch covering nine to eleven scale rows medially.

The type has the preoculars, 2-1 (suggesting as do these specimens that these scales are variable), and the upper preocular is separated from the frontal.

*Leptodeira punctata* (Peters)

*Crotaphopeltis punctatus* Peters, Mon. Ber. Akad. Wiss. Berlin, 1866, p. 93. (Type description; type locality? South Africa.)

*Leptodira pacifica* Cope, Proc. Acad. Nat. Sci. Phila., 1868 (1869) p. 310. (Type description; type locality, Mazatlán; Bishoff, collector); Günther, Biologia Centrali-Americana, Reptilia and Batrachia, 1895, p. 169; Boulenger, Cat. Snakes Brit. Mus., III, 1896, p. 19 (Presidio, near Mazatlán).

*Sibon pacificum* Cope, Bull. U. S. Nat. Mus. No. 32, 1887, p. 67; Proc. U. S. Nat. Mus., XIV, 1892, p. 678.

*Leptodira punctata* Boulenger, The Zool., 1887, p. 178.

A single male specimen of this rare snake was captured late at night near a small railway bridge about a mile east of Mazatlán. The specimen was crawling along the bank of a small rivulet which held water from a rain of the previous night.

It presents the following characters: Portion of rostral visible above very narrow; frontal longer than its distance from the end of the snout, shorter than the parietals; nostril very large, pierced chiefly in the anterior part of the divided nasal; loreal small, as high as wide; two preoculars, the upper very high, the lower minute; two postoculars, both in contact with the single large anterior temporal; posterior temporals two; diameter of eye equal to its distance from the middle of the nostril. Upper labials 7-7, the sixth extremely large, the third and fourth entering the eye; anterior chinshields slightly wider but no longer than the posterior; latter scales separated from the first widened ventral by two pairs of small scales and two single enlarged scales; lower labials, 9-9, the first four touch the chinshields. Ventrals, 149; anal divided (preceded by a very small median scale); caudals, 70; terminal scale elongate, conical, with slight, lateral grooves. Length, 516 mm.; tail, 130 mm.; head width, 13 mm.; length to angle of jaw, 19 mm.

*Color in life.* Above slightly reddish-brown, with a series of black spots on either side of the median line extending to the tail; and on the side one or two indefinite rows of irregular black flecks tending to form angular reticulations. Head brown; four small dark spots on the parietals; a small median black spot borders the parietals and on either side of the nape are two large black spots narrowly separated by a yellowish area; labials very light tan; ventral surface cream.

*Trimorphodon paucimaculatus* sp. nov.

(Plate XLVI, fig. 1)

*Holotype.* E. H. T. No. 709, collected at Mazatlán, Sin., Mexico, July 24, 1934; E. H. Taylor, collector.

*Diagnosis.* A species related to *T. bi-scutatus* Duméril and Bibron, but not having the preoculars touching frontal, and with the dorsal spots greatly elongated and fewer in number. Frontal as long as parietal; prefrontals as wide as long. Ventrals, 253; anal divided; subcaudals, 76.

*Description of the type.* Part of rostral visible above equal to about one third its distance from the rostral; frontonasals a third wider than long; prefrontals very large, their greatest width about the same as their greatest length or slightly greater; frontal not

angular anteriorly, but with an acute angle posteriorly; length of frontal equal to that of the parietal, a little longer than its distance to the end of the snout; the width of the parietal about three fourths of its length. Nostril pierced in the nasal near the supranasal border, and a suture partially dividing the scale runs from nostril to the first labial; the scale is undivided above; three loreals, the anterior upper largest, higher than long, the posterior longer than high, the third loreal lies below and almost wholly posterior to the second loreal, and appears to be formed by a segmenting of the upper part of the third labial; three pre- and three postoculars, the upper preocular not especially large and well separated from the frontal; temporal formulae, 3+5+4+5, 3+4+5+4; upper labials, 9-9, the fourth and fifth entering orbit. The diameter of the eye equals the distance from posterior edge of the nasal; lower labials, 12-13, five touching the anterior chinshields; mental triangular; posterior chinshields less than half the anterior, and separated from the first ventral by five rows of scales; eight or nine scales between the first ventral and the last labial; ventrals angular, 253; anal divided; 76 subcaudals, the terminal scute with a dorsal, a ventral and two lateral grooves. Scale formula, 25-23-25-25-25-19-17 (last count made in front of anus). The teeth of this form seem fewer than those in typical *bi-scutatus* Duméril and Bibron. The number present is eight, the first two much enlarged, the first a little smaller than the second; the next five are subequal, rather widely spaced, but no teeth appear to be missing; and then after a space are two grooved teeth a little thicker but scarcely higher than the second tooth.

*Color in life.* A dim olive band, slightly black-edged, crosses snout slightly in advance of the eyes; followed by a lighter band that crosses head between, but curves back behind eyes to the angle of the jaw; this is followed by a broad, black-edged, arched, lavender-gray band nearly severed medially by a projection from the lighter arched mark following the preceding; behind this another wide arched band confluent with the first dorsal spot. General color light, grayish-lavender; on body, 20, on the tail 10 brownish-lavender, darker-edged, saddlelike spots, each with a lighter, dorsal, central portion and separated from the following spot by four or five scale rows, its length involving 11-12 transverse scale rows; a few small scattered spots along side of body; a few dark lavender flecks on the ventrals; body below dirty cream.

*Measurements.* Length, 880 mm.; tail, 142 mm.; head length to jaw angle, 25 mm.; width, 14 mm.

*Remarks.* This species is, as has been stated, related to *T. bi-scutatus*. The type locality for the latter is "Mexique," but the high ventral and subcaudal counts suggest a southern specimen. Boulenger (Cat. Snakes III, p. 54) lists a series of seven specimens from Mazatlán and Presidio (fifty miles south of Mazatlán?) which show a relatively uniform scale formula, 25 (24); ventral scales, 237-251 (average 247); subcaudals, 78 ♀ and 84-87 ♂, average for both sexes being 83.

Günther (Biol. Centrali-Amer., May, 1895, p. 174), writing of these and certain other specimens, states that they do not agree with the forms included in certain synopses presented by Cope. Neither Boulenger nor Günther comment on the markings or the relation of the upper preocular to the frontal. It seems likely that the *bi-scutatus* as used by Günther and Boulenger is a composite and it is quite probable that the lot mentioned above from Southern Sinaloa actually should be associated with this form.

#### *Kinosternon hirtipes* Wagler

Three specimens (Nos. 560, 689, 690), which I collected at Presidio, are in the hands of Dr. Norman Hartweg, who will include data on them in his study of the genus *Kinosternon*. I am indebted to him for this identification.

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## PLATE XLIV

## FIGURE

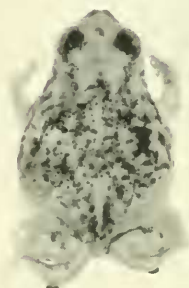
1. *Scaphiopus couchii* No. 2915 E. H. T. & H. M. S. Mazatlán, Sinaloa.
2. *Scaphiopus couchii* No. 2916 E. H. T. & H. M. S. Mazatlán, Sinaloa.
3. *Scaphiopus couchii* No. 2911 E. H. T. & H. M. S. Guaymas, Sonora.
4. *Scaphiopus couchii* No. 2912 E. H. T. & H. M. S. Guaymas, Sonora.



PLATE XLIV



1



3



2



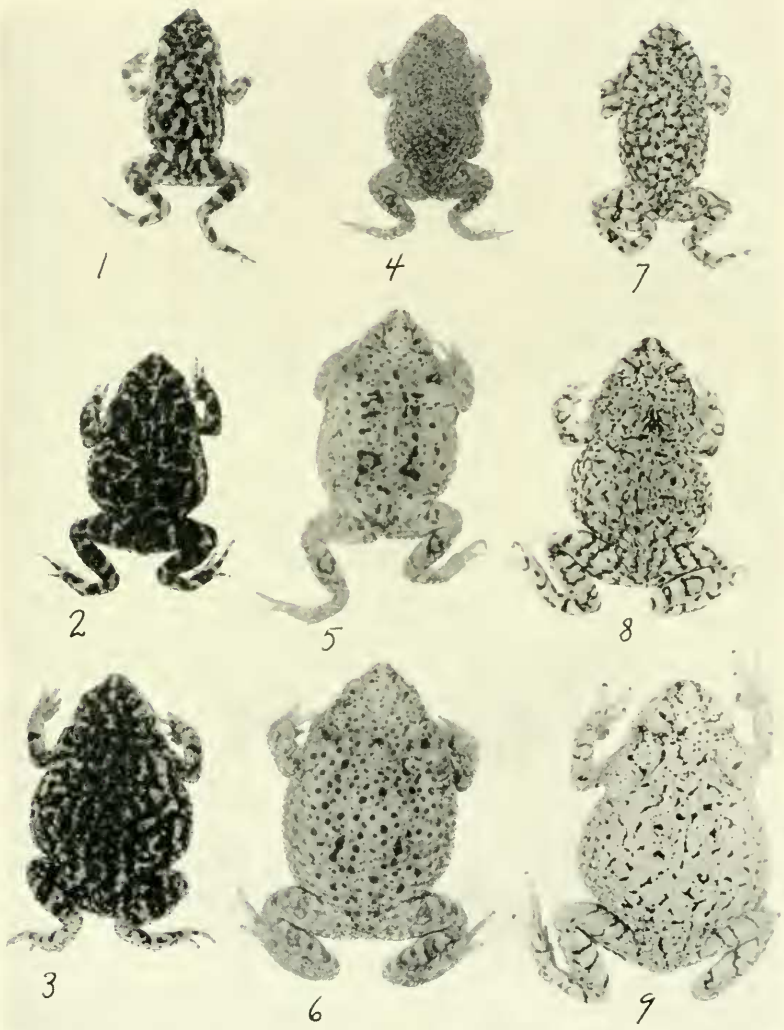
4

## PLATE XLV

## FIGURE

1. *Bufo kelloggi* No. 42 E. H. T. & H. M. S. young. Mazatlán, Sinaloa.
2. *Bufo kelloggi* No. 27 E. H. T. & H. M. S. ♂. Mazatlán, Sinaloa.
3. *Bufo kelloggi* No. 21 E. H. T. & H. M. S. Type. ♀. Mazatlán, Sinaloa.
4. *Bufo debilis* No. 11530 K. U. young. San Diego county, Texas.
5. *Bufo debilis* No. 21524 K. U. ♂. Benton, Atascosa county, Texas.
6. *Bufo debilis* No. 21526 K. U. ♀. Benton, Atascosa county, Texas.
7. *Bufo insidiosus* No. 64 E. H. T. & H. M. S. young. Two miles south Majoma, Zacatecas.
8. *Bufo insidiosus* No. 87 E. H. T. & H. M. S. ♂. Two miles south Majoma, Zacatecas.
9. *Bufo insidiosus* No. 123 E. H. T. & H. M. S. ♂. Fifteen miles south of Zacatecas, Zacatecas.

PLATE XLV



## PLATE XLVI

## FIGURE

1. *Trimorphodon paucimaculatus*, sp. nov. No. 709. E. H. T. Type. Head, enlarged. Actual size, length to angle of jaw, 25 mm., width, 14 mm. Mazatlán, Sinaloa.
2. *Colonyx fasciatus* No. 556. E. H. T. Fifteen miles south of Presidio, Mazatlán, Sinaloa.

PLATE XLVI

